CLAIMS:

What is claimed is:

1. An actuator comprising:

a stator wafer;

a first stator electrode protruding from a first surface of the stator wafer;

a micro-mover above the first surface of the stator wafer;

a first actuator electrode protruding from a first surface of the micro-mover, wherein the first surface of the micro-mover and the first surface of the stator wafer face each other; and

a first bumper positioned between the stator wafer and the micro-mover.

2. The actuator of claim 1, wherein the first bumper protrudes from the first surface of the stator wafer.

3. The actuator of claim 2, further comprising a second stator electrode on the first surface of the stator wafer and wherein the first bumper is positioned between the first stator electrode and the second stator electrode.

4. The actuator of claim 2, wherein the first bumper protrudes from the first surface of the stator wafer at least twice as much as the first stator electrode.

5. The actuator of claim 1, wherein the first bumper protrudes from the first surface of the micro-mover.

6. The actuator of claim 5, further comprising a second actuator electrode on the first surface of the micro-mover and wherein the first bumper is positioned between the first actuator electrode and the second actuator electrode.

7. The actuator of claim 5, wherein the first bumper protrudes from the first surface of the micro-mover wafer at least twice as far as the first actuator electrode.

8. The actuator of claim 1, wherein the first bumper comprises at least one of a metal and a dielectric.

9. The actuator of claim 1, further comprising a second bumper positioned between the stator wafer and the micro-mover.

10. The actuator of claim 9, wherein the first bumper and the second bumper both protrude from a same surface.

11. The actuator of claim 1, further comprising a plurality of bumpers positioned between the stator wafer and the micro-mover.

12. A method of operating an actuator comprising:

providing a stator wafer and a micro-mover over the stator wafer;

forming stator electrodes on the stator wafer and actuator electrodes on the micro-mover;

moving the micro-mover relative to the actuator electrodes by altering the voltages of selected stator electrodes over time; and

preventing physical contact between the stator electrodes and actuator electrodes.

13. The method of claim 12, wherein the preventing contact step comprises providing a bumper between the stator wafer and the micro-mover.

14. The method of claim 13, wherein the preventing contact step comprises providing the bumper between the stator electrodes.

15. The method of claim 13, wherein the preventing contact step comprises providing the bumper between the actuator electrodes.

16. The method of claim 13, wherein the preventing contact step comprises providing at least two bumpers between the stator wafer and the micro-mover.

17. The method of claim 16, wherein the preventing contact step comprises providing a first bumper on the stator wafer and providing a second bumper on the micro-mover.

18. A method of manufacturing an actuator comprising:

providing a stator wafer with stator electrodes on a first surface of the stator wafer;

providing a micro-mover with actuator electrodes on a first surface of the micro-mover;

positioning the first surface of the micro-mover facing the first surface of the stator wafer; and

providing a bumper between the stator wafer and the micro-mover.

19. The method of claim 18, wherein the providing the bumper step comprises forming the bumper on the first surface of the stator wafer.

20. The method of claim 19, wherein the providing the bumper step comprises forming the bumper such that the bumper protrudes at least twice as far from the first surface of the stator wafer as the stator electrode.